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EXAMINER

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1,3,4,9-12,19-22,33,34,37,38 and 40-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0067400 to Kawase et al. in view of European Patent No. 1 071 117 A2 to Yamazaki, U.S. Patent No. 5,679,167 to Muehlberger and U.S. Patent No. 4,328,257 to Muehlberger et al.

4. Regarding claims 1, 9, 19: Kawase et al. disclose a process and individual apparatus for manufacturing a semiconductor device according to a multi-step process, substantially as claimed and comprising: a plasma generating device for generating a

Art Unit: 1792

plasma a plasma and processing an object under atmospheric pressure or approximate atmospheric pressure (paragraphs 173 and 179); and an ink jet device for applying a droplet to the object (paragraphs 173 and 180-181). The ink jet device is movable in first and second directions, at least one of which would intersect with a direction that it is transferred in/into a chamber for processing (Figure 8 and paragraphs 72 and 73).

5. However, Kawase et al. fail to disclose a plasma generating device provided in a first chamber and another in the second chamber and the ink jet device provided in a third chamber.

6. Yamazaki teaches providing a plurality of processing chambers (e.g. a first chamber and a second chamber and a third chamber) in a single semiconductor processing apparatus for the purpose performing a multi-step processing method without the object being processed touching open air, thus fabricating a final product with high reliability (abstract).

7. Examiner also notes that the courts have ruled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). In the instant case, providing an additional plasma processing chamber would provide neither new nor unexpected results.

8. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a first plasma generating device, a second plasma generating device and an ink jet device in first, second and third chambers, respectively, in order to perform the multi-step processing method of Kawase

Art Unit: 1792

et al. without the object being processed passing to open air, thus fabricating a final product with high reliability as taught by Yamazaki.

9. Kawase et al. and Yamazaki disclose the invention substantially as claimed and as described above.

10. However, while Yamazaki does disclose that the object is capable of being transferred in/into the first chamber and the second chamber along a first direction, Kawase et al. and Yamazaki fail to disclose the plasma generating device is capable of being moved in the first chamber along a second direction intersecting with the first direction and in a direction parallel to an edge of the substrate.

11. Muehlberger disclose providing a plasma spraying device with a motion control device for the purpose of producing oscillating yaw or other motions of the plasma spraying device as desired (e.g. column 7, rows 3-5). Although the disclosure of Muehlberger does not explicitly disclose that the motion is perpendicular to the direction in which the object is transferred in/into the chamber, the disclosure does fairly teach that specific motion of the plasma spraying device can be chosen to produce a desired pattern and the courts have ruled that “the test of obviousness is not whether features of the secondary reference may be bodily incorporated into the primary reference’s structure, nor whether the claimed invention is expressly suggested in any one or all of the references, rather the test is what the combined teachings would have suggested to those of ordinary skill in the art.” *Ex parte Martin* 215 USPQ 543, 544 (PO Bd Pat App 1981).

Art Unit: 1792

12. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the plasma generating device capable of being moved in the first chamber along a second direction intersecting with the first direction and in a direction parallel to an edge of the object in Kawase et al. and Yamazaki et al. in order to produce oscillating yaw or other motions of the plasma spraying device such that a plasma pattern is produced as desired as taught by Muehlberger.

13. Kawase et al. Yamazaki et al. and Muehlberger disclose the apparatus substantially as claimed and as described above.

14. However, Kawase et al. Yamazaki et al. and Muehlberger do not explicitly disclose a rail along which the plasma generating device is slid. Muehlberger does however disclose that the disclosed plasma gun motion mechanism may be provided as disclosed in U.S. Patent No. 4,328,257 to Muehlberger et al. (column 10, rows 1-5). In the '257 patent the gun motion mechanism is provided to slide along a rail/rails. For example, see Figure 3, thereof, wherein the entirety of the structure movable on the rails (92 and 93) is considered to be the plasma generating device.

15. Further, with respect to the limitations added to claim 9, as described above, the apparatus of Yamazaki is provided so that a number of processes can be performed in the same apparatus in different chambers without being exposed to air. So, it would have been obvious to one of ordinary skill in the art that additional plasma treatment devices could be added in other chambers (i.e., a second chamber), as well. The

Art Unit: 1792

courts have ruled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

16. With respect to claim 3, the first direction is a unidirection.

17. With respect to claim 4, the object is transferred continuously (through the apparatus of Yamazaki) or with the use of step-feed, without being exposed to air between steps.

18. With respect to claim 10, the applying of the droplet is performed to a surface of the object under atmospheric pressure or approximate to atmospheric pressure.

Although, Kawase et al. do not explicitly teach that the ink jet device performs under atmospheric pressure or approximate to atmospheric pressure, at paragraph 73, in Figure 8 and at paragraph 71, the ink jet device is disclosed and it is taught that it may or may not be covered, as necessary, which means that the apparatus is operable at atmospheric pressure.

19. With respect to claim 11, the first direction is a unidirection.

20. With respect to claim 12, the object is transferred continuously (through the apparatus of Yamazaki) or with the use of step-feed, without being exposed to air between steps.

21. The majority of the limitations of claim 19 are addressed above. With respect to the first, second and third directions of movement Muehlberger discloses movement of plasma generating device as described above. Per Kawase et al., the ink jet device is

Art Unit: 1792

movable in first and second directions, at least one of which would intersect with a direction that it is transferred in/into a chamber for processing (Figure 8 and paragraphs 72 and 73) and a direction of transfer in the first chamber, which as described above can be chosen as desired.

22. With respect to claims 20 and 40, in Kawase et al. the plasma treatment is performed by the plasma generating device for forming a film over the object, etching the object or ashing the object. In Kawase et al., the ink jet device is also used for forming a film.

23. With respect to claim 21, the first direction is a unidirection.

24. With respect to claim 22, the object is transferred continuously (through the apparatus of Yamazaki) or with the use of step-feed, without being exposed to air between steps.

25. With respect to claim 29, the plasma plasma generating device can be used for forming a film over the object, etching or ashing, depending on the processing material used. See paragraph 179.

26. With respect to claims 30-31, 33 and 38, which only comprise method limitations drawn to an intended use of the apparatus, the courts have ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).



Art Unit: 1792

27. With respect to claim 34, the applying of the droplet is performed to a surface of the object under atmospheric pressure or approximate to atmospheric pressure.

Although, Kawase et al. do not explicitly teach that the ink jet device performs under atmospheric pressure or approximate to atmospheric pressure, at paragraph 73, in Figure 8 and at paragraph 71, the ink jet device is disclosed and it is taught that it may or may not be covered, as necessary, which means that the apparatus is operable at atmospheric pressure.

28. With respect to claim 37, which is drawn to a processing material, the courts have ruled that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

29. With respect to claims 41 and 44, the plasma generating devices of Muehlberger comprise first and second electrodes (Figure 6, 120 and 122; column 13, rows 30-50) for generating a plasma between the first and second electrodes and the first and second electrode have a nozzle shaped opening.

30. With respect to claim 42, the plasma generating devices of Muehlberger comprise first and second electrodes (Figure 6, 120 and 122; column 13, rows 30-50) for generating a plasma between the first and second electrodes and the first and second electrode have a nozzle shaped opening.

31. With respect to claims 43 and 45, the ink jet device comprises a nozzle provided with a hole for pushing out the droplet from the hole. See Figure 10 and paragraph 87 of Kawase et al.

Art Unit: 1792

32. With respect to claims 46-60, which are drawn to an item to be worked upon by the claimed apparatus, the courts have ruled that the inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims. In *re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

### ***Response to Arguments***

32. Applicant's arguments with respect to claims 1, 3-4, 9-12, 19-23, 29-31 and 33-34 and 37-60 have been considered but are not persuasive over the teachings of the relied upon prior art and the knowledge that would have been in the possession of one of ordinary skill in the art exercise ordinary creativity, common sense and logic.

33. Again, as pointed out previously, Muehlberger et al. is relied upon for teaching that it would obvious to one of ordinary skill in the art to choose specific motions of the plasma spraying device as needed in order to produce a desired pattern, this would include motions parallel to a side or edge (top and/or lateral) of the substrate. No specific motivation is given, as in general, Muehlberger et al. disclose that is obvious to provide a process providing structure in whatever type of motion is needed in order to perform a desired process with desired results. Examiner submits that even without this teaching incorporating such movements would be obvious to one of ordinary skill in the art. Examiner also notes that the courts have ruled that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly

Art Unit: 1792

suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Therefore, Examiner maintains that varied motions, optimizable according to the desired effects, would be obvious to one of ordinary skill in the art exercising ordinary creativity, common sense and logic.

34. With respect to Applicant's arguments regarding the movement of the plasma generating device on rods in Muehlberger et al, as noted above, the entirety of the structure slidable on the rails is considered to be the plasma generating device, as all of the structures are used (either directly or indirectly) in the method of generating plasma for processing as disclosed.

35. With respect to Applicants conjecture regarding the impropriety of the rejection of claim 20, Examiner notes that both the ink jet device and the plasma generating device are mentioned therein. Further, the features of the plasma generating device are treated as claimed. Examiner also notes that the claim is drawn to an intended use of the claimed apparatus and therefore is also subject to the following findings: The courts have ruled that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). The courts have also ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art

Art Unit: 1792

apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

36. Finally, with respect to Applicant's arguments regarding dependent and cancelled claim 39, Examiner points out that the plurality of chambers of Yamazaki are provided for processing the substrate in each chamber, in turn. Therefore, the object is necessarily "transferred" thereto. Examiner also notes that this limitation and argument are drawn to an intended use of each of the chambers. Applicant is reminded that the courts have ruled that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). The courts have also ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

37. For the reasons set forth above, Applicant's arguments are not persuasive and Examiner continues to rely upon the above cited prior art and the creativity, common sense and logic of one of ordinary skill in the art in order to render the claimed invention obvious.

38. Examiner also notes that the current office action is being sent out in order to expedite the examination process. After receiving Applicant's corrected claim set in response to the notice of non-compliant amendment mailed 15 April 2009, Examiner noticed that the previous amendment and the corrected amendment were non-

Art Unit: 1792

compliant for other reasons. For example, the changes to the language of claims 1 and 19, where the phrase "in a direction parallel to an edge of the object" was replaced with "in a direction parallel to a side of the object", without properly identifying the change or the status modifier for the claim. Examiner requests Applicant's cooperation abiding by the amendment requirements in the future.

### ***Conclusion***

33. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARLA MOORE whose telephone number is (571)272-1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Karla Moore/  
Primary Examiner, Art Unit 1792